Table I Baseline characteristics of 200 individuals sustaining a hip fracture, presenting to one of the five public sector hospitals in eThekwini (formerly known as Durban) in South Africa

		n **(%)**
*Age (years)		74.3 ± 8.8
Gender	Female	144 (72)
Ethnic Group	Indian	110 (55)
	African	66 (33)
	White	21 (10.5)
	Coloured	3 (1.5)
Employment Status	Pensioner	195 (97.5)
	Unemployed	2 (1)
	Employed part-time work	3 (1.5)
Education level	No schooling	74 (37)
	Primary	65 (32.5)
	Secondary	51 (25.5)
	Higher education	10 (5)
*[a] Anthropometric measurements	Weight (kg)	54.7 ± 13.8
	Height (cm)	154.5 ± 9.8
Body Mass Index (kg/m$^{2)}$	Underweight (≤18.5)	29 (21.3)
	Normal (18.6-24.9)	76 (55.9)
	Overweight (25.0-29.9)	19 (13.9)
	Obese (≥30.0)	12 (8.8)
Risk factors for osteoporotic fragility fractures	Glucocorticoid use (≥ 3 months)	11 (5.5)
	Prior fragility fracture(s) when aged ≥ 40 years	55 (27.5)
	Prior history of falls in the last 2 years	90 (45)
	Parental history of hip fracture	11 (5.5)
	Smoking history (past/current)	36 (18)
	Number of subjects who used alcohol	31 (15.5)
Calcium intake per day (grams/day)	Calcium intake (≤ 500mg /day)	132 (66)
	Calcium intake (501 to 1000mg/day)	58 (29)
	Calcium intake (≥ 1000mg/day)	10 (5)
*Functional scales cumulative score	Physical self-maintenance score	13.3 ± 1.9
	Instrumental activities of daily living	22.1 ± 4.8
Biochemical parameters on admission		
Anaemia: women		94 (65.3)
Anaemia: men		45 (80.4)
Elevated creatinine (≥ 133 μmol/L)		69 (34.5)
Hypoalbuminaemia (≤ 34.9 g/dL)		117 (58.5)
[b] Deficient 25 OHD (≤ 29.9 nmol/L)		72 (36)
Insufficiency 25 OHD (≥30 – 49.9 nmol/L)		61 (30.5)
Sufficient 25 OHD (≥ 50.1 nmol/L)		38 (19)
[c]Elevated C- Reactive protein (≥ 10.10 mg/L)		125 (62.5)
[d]Elevated Parathyroid hormone (≥ 7.1 pg/ml)		42 (21)

*mean ± SD

[a] n = 64 could not have weight and height measured as unable to stand independently at the time of discharge

[b] Vitamin D (25 OHD) measurement was available in 171 subjects only

[c] C-Reactive protein was available in 182 subjects
[d] Parathyroid hormone were available in 157 subjects only

Table II Comparison of demographic, clinical, functional and management status between those who survived and those who died by 30 days post hip fracture (univariate analyses)

	Deaths (n=26) n (%)	Survivors (n=174) n (%)	p value	HR	95% CI
*Age (years)	75.6 ± 12.3	74.1 ± 8.2	0.578		
Education level					
No schooling	14 (53.8)	60 (34.5)	0.522	0.92	0.70-1.20
Primary	5 (19.2)	60 (34.5)			
Secondary	5 (19.2)	46 (26.4)			
Higher education	2 (7.7)	8 (4.6)			
Lifestyle factors					
Smoking	5 (19.2)	31 (17.8)	0.534	0.74	0.28-1.94
Alcohol	3 (11.5)	28 (16.1)	0.811	1.16	0.35-3.86
*Calcium intake (grams/day)	377.0 ± 235.3	440.9 ± 229.2	0.343	0.10	0.99-1.00
Functional status cumulative scores					
*PSMS	12.3 ± 3.3	13.4 ± 1.6	0.015	0.87	0.77-0.97
*IADL	20.4 ± 5.4	22.4 ± 4.7	0.066	0.93	0.87-1.01
Management					
[#]Days from fracture to admission	1.0 (0.0-2.5)	1. 0 (0.0-3.0)	0.736	0.99	0.96-1.03
*Days from admission to surgery	12.2 ± 8.2	11.2 ± 9.3	0.746	1.01	0.97-1.05
*Length of hospital stay (days)	21.3 ±12.1	22.0 ± 15.2	0.794	0.10	0.97-1.03

*Mean ± SD; [#]Median (IQR), HR Hazard ratio, 95%CI: 95% Confidence Interval
PSMS: Physical self-maintenance score, IADL: Instrumental activities of daily living

Table III Comparison of biochemical parameters in survivors and deaths at 30 days post hip fracture (unadjusted univariate analyses)

	Deaths (n=26)	Survivors (n=174)	p-value	HR	95% CI
Hyponatraemia (≤136 mmol/L)	12 (16.2)	72 (41.4)	0.818	1.10	0.51-2.37
Elevated serum urea (≥7.1 mmol/L)	15 (57.7)	68 (39.1)	0.047	2.21	1.01-4.74
Elevated serum creatinine (≥133 μmol/L)	11 (42.3)	58 (33.3)	0.404	1.52	0.70-3.31
[a]Hypolbuminaemia (≤35 g/dL)	25 (96.2)	92 (52.9)	0.003	21.3	2.88-157.2
[b]25 OHD Sufficient Insufficient	0 18 (100)	37 (26.1) 105 (73.9)	n/a	n/a	
[c]Elevated CRP (≥ 10.10 mg/L)	20 (17.5)	94 (82.5)	0.016	5.93	1.39-25.4
[d]Elevated Parathyroid hormone (≥ 7.1 pg/ml)	4 (9.6)	38 (90.4)	0.704	0.704	0.2-2.47

HR Hazard ratio, 95%CI: 95% Confidence Interval
GGT: Gamma glutamyl transferase, CRP: C - reactive protein, ESR: Erythrocyte sedimentation rate
[a]Albumin was available in 198 patients
[b]Vitamin 25 OHD was available in 160 patients
[c]C- Reactive protein was available in 182 patients
[d] Parathyroid hormone were available in 157 subjects only

Table IV Multivariate model for predictors of mortality at 30 days and one year

Thirty days			
	HR	**95.0% CI**	**p value**
Conservative management (no surgery)	0.56	0.13-2.25	0.406
Elevated urea	3.00	0.45-19.84	0.254
[a]Hypoalbuminaemia (≤ 35 g/dL)	2.86	0.21-38.80	0.430
[b]Elevated C- Reactive protein (≥ 10.10 mg/L)	2.36	0.39-14.10	0.384
PSMS	1.49	0.81-2.73	0.200
Inability to eat	12.9	0.90-185.1	0.060
Inability to groom	4.43	0.11-175.4	0.428
Inability to transfer to a bed independently	0.43	0.00-50.65	0.726
Inability to bathe	2.06	0.01-351.2	0.784
Inability to go to toilet independently	1.73	0.05-54.69	0.755
Inability to manage finances independently	1.78	0.52-6.09	0.357
One year			
Days to surgery	1.02	1.00-1.05	0.075
Elevated urea	1.03	0.93-1.15	0.578
Elevated creatinine (≥ 133 μmol/L)*	2.43	1.02-5.76	0.044
[a]Hypoalbuminaemia (≤ 35 g/dL)*	0.94	0.26-3.39	0.928
[b]Elevated C- Reactive protein *	5.78	1.97-16.91	0.001
[c]25 hydroxy vitamin D *insufficiency/deficiency	1.91	0.28-0.961	0.032
Inability to groom	4.09	0.45-37.04	0.210
Inability to transfer to a bed independently	0.19	0.02-2.13	0.178
Inability to cook	1.46	0.59-3.65	0.416
Inability to manage finances independently	0.82	0.32-2.16	0.694

HR Hazard ratio, 95%CI: 95% Confidence Interval
PSMS: Physical self-maintenance score. * measured on initial admission with hip fracture
[a]Albumin was available in 198 patients
[b]C- Reactive protein was available in 182 patients
[c] Vitamin D (25 OHD) measurement was available in 171 subjects only

Supplementary Table I Prevalence of risk factors used to calculate sample size.

Risk factors	**Cases with hip fractures**
Age	>70 years 60 %; n = 183
Gender	Males 30%; n = 78
Ethnic	Whites 30%; n = 189
Osteoporosis risk (<-2.5 on BMD)	70%; n = 21
Previous fracture history	20 to 40%; n = 158
Parental history of hip fracture	5 to 31%; n = 194

Supplementary Table II Details of surgical management of 200 individuals sustaining a hip fracture

Surgical management	
	n (%)
*Days from fracture to admission	1.0 (0.0-3.0)
*Days from admission to surgery	19.0 (12.3-25.0)
*Length of hospital stay (days)	9.0 (12.3 – 25.0)
Number of patients conservatively managed	27 (13.5)
Prosthesis type (only 173 subjects had surgical intervention)	
Bipolar hip replacement	60 (35.0)
Intra-medullary nail	22 (13.0)
Sliding screw and plate	64 (37.0)
Hemiarthroplasty	23 (13.3)
Not recorded	3 (1.7)

*median and IQR

Supplementary Table III Comparison of pre-fracture functional status between survivors and deaths at 30 days presented as percentage of subjects unable to independently perform activities: unadjusted analysis

	Deaths (n=26)	Survivors (n=174)	p value
Physical Self-Maintenance Scale			
Eating	3 (11.5)	2 (1.1)	0.011
Dressing	5 (19.2)	13 (7.5)	0.069
Grooming	7 (26.9)	13 (7.5)	0.007
Walking	7 (26.9)	22 (2.6)	0.205
Transfer bed	7 (26.9)	10 (5.7)	0.002
Bathing	7 (26.9)	13 (7.5)	0.007
Toileting	7 (26.9)	12 (6.9)	0.004
Instrumental Activities of Daily Living			
Use a telephone	7 (26.9)	39 (22.4)	0.541
Walk a distance	17 (65.4)	85 (48.9)	0.155
Shopping	17 (65.4)	91 (52.3)	0.328
Cooking	15 (57.7)	63 (36.2)	0.051
Housework	16 (61.5)	72 (41.4)	0.109
Handiwork	19 (73.1)	100 (57.5)	0.237
Laundry	17 (65.4)	85 (48.9)	0.197
Manage own medication	7 (26.9)	32 (20.1)	0.786
Manage their own finances	11 (42.3)	36 (20.7)	0.025

Fischers' exact test was reported for the variable above

Supplementary Table IV Comparison of demographic, clinical, functional and management status between survivors and deaths at one year post hip fracture: unadjusted analysis

median (IQR), *Mean ± SD

	Deaths (n=67) n (%)	Survivors (n=117) n(%)	p value	HR	95% CI
*Age(years) (mean, SD)	76.2 ± 9.7	73.6 ± 7.9	0.136	1.02	0.994-1.046
[a] Weight (kg) (median, IQR)	49.0 (43.6-57.0)	56.0 (45.3- 63.5)	0.076	0.98	0.951-1.002
[a] BMI (kg/cm^2) (median IQR)	20.4 (18.6-23.3)	22.2 (20.0-25.5)	0.087	0.94	0.871-1.009
Education level					
No schooling	26 (38.8)	41 (35.0)	0.795	1.035	0.922-1.225
Primary	20 (29.9)	43 (36.8)			
Secondary	13 (19.4)	31 (26.5)			
Higher education	8 (11.9)	2 (1.7)			
Lifestyle factors					
Smoking	12 (17.9)	21 (17.9)	0.810	0.925	0.488-1.754
Alcohol	10 (14.9)	17 (14.5)	0.572	0.824	0.421-1.614
*Calcium intake (grams/day)	410.7 ± 215.2	431.9 ± 232.4	0.926	1.000	0.999-1.001
Functional status cumulative scores					
[#]PSMS	14.0 (13.0-14.0)	14.0 (14.0-14.0)	0.152	0.93	0.85-1.03
[#]IADL	21.0 (17.0-26.0)	23.0 (20.0-27.0)	0.078	0.958	0.913-1.005
Days to surgery	14.4±12.9	10.1±6.8	0.022	1.02	1.00-1.04

BMI: Body Mass Index, PSMS: Physical Self-Maintenance, IADL: Instrumental Activities of Daily Living

[a] n = 64 could not have weight and height measured as they were unable to stand independently at the time of discharge. Weight n=129 (Survivors 92 and Deaths 37)

Supplementary Table V Comparison of pre-fracture functional status between survivors and deaths at one year presented as percentage of subjects unable to independently perform activities: unadjusted analysis

	Deaths (n = 67)	Survivors (n = 117)	p value
Physical Self-Maintenance Scale			
Eating	5 (7.5)	0 (0.0)	
Dressing	10 (14.9)	8 (6.8)	0.090
Grooming	12 (17.9)	8 (6.8)	0.045
Walking	14 (22.4)	14 (11.1)	0.353
Transfer bed	12 (17.9)	5 (4.3)	0.014
Bathing	11 (16.4)	9 (7.7)	0.132
Toileting	9 (13.4)	10 (8.5)	0.318
Instrumental Activities of Daily Living			
Use a telephone	18 (26.9)	28 (23.1)	0.565
Walk a distance	41 (61.2)	61 (48.7)	0.147
Shopping	45 (67.2)	61 (48.7)	0.059
Cooking	35 (52.2)	43 (34.2)	0.023
Housework	38 (56.7)	50 (39.3)	0.074
Handiwork	45 (67.2)	74 (58.1)	0.033
Laundry	40 (59.7)	61 (48.7)	0.221
Manage own medication	18 (26.9)	19 (15.4)	0.057
Manage own finances	22 (32.8)	24 (18.8)	0.048

Fishers' exact test was reported for the significant variables in the above table

Supplementary Table VI Comparison of biochemical parameters in survivors and deaths at one year post hip fracture unadjusted analysis

	Deaths (n = 67)	Survivors (n = 117)	p-value	HR	95% CI
Hyponatraemia (≤136 mmol/L)	35 (52.2)	40 (34.2)	0.1139	1.59	0.98-2.57
[#]Serum urea (≥7.1 mmol/L)	8.9 ± 5.9	7.0 ± 3.9	0.0037	1.05	1.056-2.754
Elevated serum creatinine (≥133 μmol/L)	31 (46.3)	33 (28.2)	0.010	1.88	1.16-3.04
[a]Hypolbuminaemia (≤35 g/dL)	58 (86.6)	49 (41.9)	< 0.001	6.05	2.99-12.23
[b]25 OHD Sufficient Insufficient/Deficient	5 (12.5) 45 (34.4)	5 (87.5) 45 (36.6)	0.017	3.09	1.23-7.80
[c]Elevated CRP (> 10.1 mg/ml)	51 (76.1)	63 (47.4)	< 0.001	5.15	2.34-11.36
[d] Elevated parathyroid hormone	6 (3.2)	32 (96.8)	0.343	1.61	0.60-4.28

[#]All results reported as a mean ± SD and measured on initial admission
Total 25 hydroxy vitamin D (25 OHD) insufficient or deficient ≤49.9 mmol/L
Parathyroid hormone (elevated ≥ 7.1 pg/mL)
[a]Albumin was available in 183 patients
[b]Vitamin 25 OHD was available in 160 patients
[c]C - reactive protein (CRP) was available in 171 patients
[d]Parathyroid hormone were available in 157 subjects only